

What is claimed is:

1. Apparatus for formation of polarizers from lyotropic liquid crystals (LLC) based on at least one organic compound comprising:
at least one system for application of LLC onto at least one substrate,
at least one system for applying orienting force on LLC and/or on the molecules and/or on the molecular complexes of the organic compound, and
a means for supporting said systems with the possibility of relative movement between the systems and said at least one substrate holder,
wherein said at least said one system for applying orienting force comprises at least one plate, one end of which is fixed such that during relative movement of the plate and the substrate holder at least a part of the plate's surface travels unrestricted over the surface of the applied film providing an external orienting force on LLC and/or molecules and/or supra-molecular complexes of the organic matter(s).

2. Apparatus according to claim 1 wherein said at least one system for application of the LLC includes means of feeding the LLC onto the substrate.

3. Apparatus according to claim 2 wherein said at least one means of feeding LLC comprises at least one injector.

4. Apparatus as in claim 2 wherein said at least one means for feeding LLC comprises at least one roller.

~~5. Apparatus as in claim 4 which includes at least one channel with metering dispenser.~~

6. Apparatus according any of claims 1-3 wherein at least one system for application of the LLC comprises at least one element for application LLC onto the substrate and at least one roller.

7. Apparatus as in claim 2 in which said at least one system for application of LLC onto the substrate includes at least one rod.

8. Apparatus according to claim 6 wherein on the surface of at least one roller there is a relief pattern.

9. Apparatus according to any of claims 1, 2, 6 or 7 wherein at least a part of the surface of the plate possesses hydrophilic or hydrophobic qualities.

10. Apparatus according to any of claims 1, 2, 6 or 7 wherein at least on a part of the surface of the plate(s) there is a relief (pattern).

11. Apparatus according to any of claims 1, 2, 6 or 7 wherein the plate(s) is (are) made out of a polymer material or rubber or at least two different materials comprising separate parts of the plate(s) and/or comprising the layers of the plate(s).

12. Apparatus according to claim 2 wherein at least one system of application is installed with the possibility of vertical movement relative to the substrate holder(s).

13. Apparatus according to claim 2 wherein at least one system of application is installed with the possibility of horizontal movement relative to the substrate holder.

14. Apparatus according to claim 1 wherein at least one system of application is implemented as at least one fixed roller, which is installed with the possibility of movement to force the plate to the film under formation

15. Apparatus according to claim 1 wherein the plate is implemented in a rectangular shape.

16. Apparatus according to claim 1 wherein it is additionally supplied with at least one anti-vibration means.

17. Apparatus according to claim 1 wherein it is additionally supplied with a system of automatic control over the process of formation.

5 18. Apparatus for local removal of a polarizing film of LLC of at least one organic compound, comprising

at least one system of feeding solvent of the film's material, implemented in at least one directing channel, and

at least one vacuum system for removal of the solvent and dissolved LLC.

10 19. Apparatus according to claim 18 wherein the system of feeding and the system of removal are installed so that their longitudinal axes are situated in the direction perpendicular to the plane of the substrate holder.

15 20. Apparatus according to claim 18 or 19 wherein the system of feeding and the system of removal are mounted for vertical and/or horizontal movement.

20 21. Apparatus according to claim 18 including a substrate holder wherein the system of feeding and the systems of removal on one hand, and the substrate holder on the other, are mounted for relative movement with respect to one another.

22. Apparatus according to claim 18 wherein the system of feeding and the system of removal are mounted for relative movement with respect to one another.

~~23. Apparatus according to claim 18 wherein the system of feeding and the~~
25 systems of removal comprise coaxial tubes, and the inner diameter of the tube for removal is larger than the inner diameter of the tube for feeding of solvent.

24. Apparatus according to claim 18 wherein the system(s) of feeding and the systems of removal are mounted at a fixed distance from each other.

30 25. Technological production line for formation of polarizers, comprising

at least one system of formation of polarizing films, obtained from LLC of at least one organic compound,
at least one system of local removal of polarizing film's material, obtained from LLC of at least one organic compound,
5 at least one substrate holder, and
at least one system for providing relative movement between the substrate holder and said at least one system for formation and at least one system for local removal of the polarizing film.

10 26. Technological line according to claim 25 wherein at least one apparatus for formation of films is implemented according to claim 1.

15 27. Technological line according to claim 26 wherein at least one system of local removal is implemented according to claim 17.

28. Technological line according to claim 27 wherein the technological production line is placed in a chamber and is implemented in a single casing.

20 29. Technological line according claim 27 wherein it is additionally equipped with at least one means of drying.